

TOKE ★ V04 86-017757/03 ★ J6 0241-291-A  
Printed circuit board mfr. by multi-step process using chemical  
contg. copper salt, reducing agent, pH regulator and complexing  
agent

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In the mfr. of a printed circuit plate, (a) an adhesive is applied to a laminate plate; (b) holes for through-hole formation are perforated through the laminate plate; (c) the surface of the adhesive is coarsened and hydrophilised and the plate is dipped in a catalyst soln. contg. a metal or a metal oxide having a catalytic action to a chemical copper-plating bath to be used in the following step, whereby all the surfaces of the plate are coated with the metal or metal oxide; (d) the laminate plate is dipped in a chemical copper-plating bath to form a chemical copper-plated layer all over the surfaces of the plate and the inner walls whereby the all surfaces of the plate are made electroconductive; (e) a resist film is formed on the surface of the adhesive layer only in the parts where electroconductive circuits are not to be formed; (f) the plate is subjected to electric copper-plating so that the copper-thickness of the electroconductive pattern parts (including the wall of the perforated holes) are grown to a desired thickness; (g) the resist layer is removed; and (h) a step where the copper-plated film formed in the non-circuit parts in the laminate plate in step (d) is removed by dipping in a copper-etching soln..

The chemical copper plating bath contains a copper salt, a reducing agent, a pH regulating agent and a complexing agent of a mixt. comprising EDTA and N,N,N',N'-tetrakis-(2-hydroxypropyl) ethylene diamine, and contains at least one selected from a sulphur-contg. cpd. (e.g. Na<sub>2</sub>S), a nonionic surfactant and an alpha,alpha-dipyridyl or phenanthroline deriv..

USE/ADVANTAGE - Reliability is high. Adhesion between the laminate plate and the plated copper-film is high. Formation of copper film of a desired thickness may be attained in a short period of time. (6pp Dwg.No.0/0)

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